

Title (en)
Vector modulators and calibration thereof.

Title (de)
Vektor-Modulatoren und deren Kalibrierung.

Title (fr)
Modulateurs à vecteurs et leur calibrage.

Publication
EP 0265218 A2 19880427 (EN)

Application
EP 87309238 A 19871020

Priority
US 92238386 A 19861023

Abstract (en)
Calibration of a vector modulator is done using a scalar detector (220) to measure the amplitude of the RF output signal, phase shifters (221, 223) to adjust the relative phases of the I and Q components of the RF carrier, and variable attenuators (225, 227) in the I and Q modulation signal input lines to adjust the relative amplitude of the modulation signals. DC signal sources provide reference signals for the I and Q modulation inputs, carrier leak compensation signals, and calibration signals for balancing the amplitude of the I and Q modulation signals. An iterative four step calibration process is followed until no change in the results is observed. The quadrature phase error is minimized by adjusting the phase shifters (221, 223). The carrier leakage is minimized by adjusting the carrier leak compensation sources (229, 231) to minimize RF output with the modulation inputs grounded (247, 247). The amplitudes of the I and Q modulation signals are balanced by adjusting the attenuators (225, 227) until the output amplitudes are equal. Finally, the quadrature calibration signal sources (235, 237) are adjusted until the output amplitudes they produce are balanced.

IPC 1-7
G01R 35/00; **H03C 1/40**; **H03C 1/52**; **H04L 27/20**

IPC 8 full level
G01R 35/00 (2006.01); **H04J 11/00** (2006.01); **H04L 27/36** (2006.01); **H04L 27/00** (2006.01)

CPC (source: EP US)
G01R 35/005 (2013.01 - EP US); **H04L 27/364** (2013.01 - EP US); **H04L 2027/0016** (2013.01 - EP US); **H04L 2027/0018** (2013.01 - EP US)

Cited by
EP1619848A1; CN107202970A; EP1478145A4; EP0305164A3; US5357221A; EP0570979A1; US5387883A; AU681578B2; US6760577B2; US7068983B2; US7415077B2; DE4420376A1; GB2283627A; GB2283627B; DE4420376C2; GB2241129A; GB2241129B; GB2232328A; US5012208A; GB2232328B; AU623240B2

Designated contracting state (EPC)
DE FR GB

DOCDB simple family (publication)
US 4717894 A 19880105; DE 3788498 D1 19940127; DE 3788498 T2 19940526; EP 0265218 A2 19880427; EP 0265218 A3 19890726; EP 0265218 B1 19931215; JP H07105775 B2 19951113; JP S63119339 A 19880524

DOCDB simple family (application)
US 92238386 A 19861023; DE 3788498 T 19871020; EP 87309238 A 19871020; JP 26757287 A 19871022